UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/757,466	01/15/2004	Masahiko Sugimoto	0649-0934P	5046

2292 7590 12/07/2007
BIRCH STEWART KOLASCH & BIRCH
PO BOX 747
FALLS CHURCH, VA 22040-0747

EXAMINER	
QUIETT, CARRAMAH J	
ART UNIT	**PAPER NUMBER**
2622	

NOTIFICATION DATE	DELIVERY MODE
12/07/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary	Application No.	Applicant(s)	
	10/757,466	SUGIMOTO, MASAHIKO	
	Examiner	Art Unit	
	Carramah J. Quiett	2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 10/31/07.

2a) This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-26 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) 2,3,6-8,10,11 and 14-16 is/are allowed.

6)☐ Claim(s) 1,4,5,9,12,13 and 17-26 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 15 January 2004 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 8/31/07.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/31/2007 has been entered. Claims 1-26 are pending.

Response to Arguments

2. Applicant's arguments with respect to claims 19-20 and 24-25 have been considered but are moot in view of the new ground(s) of rejection.

3. Applicant's arguments filed 10/31/2007 have been fully considered but they are not persuasive.

4. The Applicant asserts that the secondary reference, Murakami fails to disclose a high-sensitivity image signal including plural color components and a low-sensitivity image signal including the *same* plural color components. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the *same* plural color components) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Accordingly, the Examiner maintains the rejections to claims 1, 4, 5, 9, 12, 13, and 17-26.

Claim Rejections - 35 USC § 103

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. **Claims 1, 4-5, 9, 12, 13, 17, and 22** are rejected under 35 U.S.C. 103(a) as being unpatentable over Fossum et al. (U.S. Pat. #6,137,100) in view of Murakami (JP Pub. #06-178198)

As for **claim 1**, Fossum discloses a the solid-state imaging element has a plurality of pixels (col. 1, lines 5-7), each of the pixels is divided into a main pixel (fig. 1B, 110), which has a first area for obtaining a high-sensitivity image signal, and a sub-pixel (fig. 1 B, 112, 114, or 116), which has a second area which is smaller than the first area, for obtaining a low-sensitivity image signal (col. 2, lines 38-59). Fossum teaches that image quality and signal-to-noise ratio of the color image signal can be improved by changing the effective area of each color pixel (col. 1, lines 20-32) or applying separate gains for separate spectral band channels (col. 1, lines 65-66).

Although Fossum discloses a means for the signal processing of an image while it is readout from the sensor in order to improve the quality of the image, he does not teach a digital camera comprising:

a diaphragm, which controls an amount of incident light by varying a stop-amount;

said solid-state imaging element, which receives the incident light passed through the diaphragm,

a controller, which individually controls a gain amount of the high-sensitivity image signal including plural color components and a gain amount of the low-sensitivity image signal including plural color components in response to the stop-amount of the diaphragm; and

a synthesizing processor, which synthesizes the controlled high-sensitivity image signal and the controlled low-sensitivity image signal.

In a similar field of endeavor, Murakami discloses a solid-state image pick up device that comprises: a camera lens (fig. 2, ref. 1) with a diaphragm, which controls an amount of incident light by varying a stop-amount (abstract); a solid-state imaging element (fig. 2, ref. 3a, 3b, 3c), which receives the incident light passed through the diaphragm. Murakami's solid-state image pick up device also includes a controller (fig. 2, ref. 6/9a-9c), which individually controls a gain amount of the high-sensitivity image signal including (along with) plural color components and a gain amount of the low-sensitivity image signal including (along with) plural color components in response to the stop-amount of the diaphragm (abstract, paragraph 9); a synthesizing processor (fig. 2, circuit 7), which synthesizes the controlled high-sensitivity image signal and the controlled low-sensitivity image signal, and outputted as a video signal (paragraph 2). As shown in fig. 2, Murakami illustrates control lines (9a-9c) coming from the storage device (ref. 6) to adjust the gain control amplifiers of the individual sensitivities (plural colors). For when the gain amplifier of the high sensitivity image signal (one of the plural colors) and the low sensitivity image signal (another one of the plural colors) receives a control signal, the other plural colors receive a signal. In other words, the gain of amount of signals with different (high/low) sensitivities (colors) is individually controlled along with other colors. Please read Murakami, Abstract and 1st Example.

The systems of Fossum and Murakami each have a solid state- imaging element and implement (or is capable of implementing) gain control (Fossum, col. 1, lines 65-66; Murakami, Abstract). Additionally, Murakami's system utilizes solid-state element(s) in a digital camera. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Murakami's solid-state image pickup device with Fossum's solid-state image sensor for correcting the change of the sensitivity of a solid-state image pickup element due to the stop value of a camera lens as well as improving a picture free from color irregularity, shading, etc. (Murakami, Abstract).

As for **claim 4**, Fossum, as modified by Murakami, teaches an image sensor with a plurality of pixels are arranged in an array shape (Fossum, claim 1).

As for **claim 5**, Fossum, as modified by Murakami, also discloses an image sensor wherein each of the pixels is divided into the main pixel and the sub-pixel by an element-separating band deviated from the center of the pixel. This feature is clearly shown in figures 1B and 1D of Fossum.

Regarding **claims 9 and 12-13**, these claims are method claims corresponding to the apparatus claims 1 and 4-5, respectively. Therefore, method claims 9 and 12-13 are analyzed and rejected as previously discussed with respect to claims 1 and 4-5, respectively.

For **claim 17**, Fossum, as modified by Murakami, discloses the digital camera wherein the plural color components include a red component, a green component and a blue component (Fossum, fig. 1B; Murakami, 1st Example).

Claim 22 is a method claim corresponding to the apparatus claim 17. Therefore, method claim 22 is analyzed and rejected as previously discussed with respect to claim 17.

7. **Claims 19-20 and 24-25** are rejected under 35 U.S.C. 103(a) as being unpatentable over Fossum et al. (U.S. Pat. #6,137,100) in view of Murakami (JP Pub. #06-178198) and Tanaka et al. (U.S. Pat. #6,674,470).

As for **claim 19**, Fossum discloses a solid-state imaging element having a plurality of pixels (col. 1, lines 5-7), each of the pixels is divided into a main pixel (fig. 1B, 110), which has a first area for obtaining a high-sensitivity image signal, and a sub-pixel (fig. 1 B, 112, 114, or 116), which has a second area which is smaller than the first area, for obtaining a low-sensitivity image signal (col. 2, lines 38-59). Fossum teaches that image quality and signal-to-noise ratio of the color image signal can be improved by changing the effective area of each color pixel (col. 1, lines 20-32) or applying separate gains for separate spectral band channels (col. 1, lines 65-66).

Although Fossum discloses a means for the signal processing of an image while it is readout from the sensor in order to improve the quality of the image, he does not teach a digital camera comprising:

a diaphragm, which controls an amount of incident light by varying a stop-amount;

said solid-state imaging element, which receives the incident light passed through the diaphragm,

the plurality of pixels including (i) main pixels for a first color and (ii) sub-pixels for the first color;

a controller, which individually controls a gain amount of the high- sensitivity image signal and a gain amount of the low-sensitivity image signal in response to the stop-amount of the diaphragm; and

a synthesizing processor, which synthesizes the controlled high- sensitivity image signal and the controlled low-sensitivity image signal.

In a similar field of endeavor, Murakami discloses a solid-state image pick up device that comprises: a camera lens (fig. 2, ref. 1) with a diaphragm, which controls an amount of incident light by varying a stop-amount (abstract); a solid-state imaging element (fig. 2, ref. 3a, 3b, 3c), which receives the incident light passed through the diaphragm. Murakami's solid-state image pick up device also includes a controller (fig. 2, ref. 6/9a-9c), which individually controls a gain amount of the high-sensitivity image signal including (along with) plural color components and a gain amount of the low-sensitivity image signal including (along with) plural color components in response to the stop-amount of the diaphragm (abstract, paragraph 9); a synthesizing processor (fig. 2, circuit 7), which synthesizes the controlled high-sensitivity image signal and the controlled low-sensitivity image signal, and outputted as a video signal (paragraph 2). Please read Murakami, Abstract and 1st Example.

The systems of Fossum and Murakami each have a solid state- imaging element and implement (or is capable of implementing) gain control (Fossum, col. 1, lines 65-66; Murakami, Abstract). Additionally, Murakami's system utilizes solid-state element(s) in a digital camera. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Murakami's solid-state image pickup device with Fossum's solid-state image sensor for correcting the change of the sensitivity of a solid-state image pickup element due to the stop value of a camera lens as well as improving a picture free from color irregularity, shading, etc. (Murakami, Abstract).

Also, in a similar field of endeavor, Tanaka discloses the plurality of pixels (figs. 3, 7, and 42) including (i) main pixels for a first color (fig. 7, ref. 92a) and (ii) sub-pixels for the first color (fig. 7, ref. 92b). Please read col. 6, lines 34-45; col. 7, lines 36-48; and col. 29, lines 20 – col. 30, line 4. In light of the teaching of Tanaka, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the image sensor of Fossum with a first color for main pixels and a first color for sub-pixels in order to increase the gain in a unit cell thereby improving the sensitivity (Tanaka, col. 3, lines 17-25).

For **claim 20**, Fossum, as modified by Murakami and Tanaka, discloses the digital camera wherein: the plurality of pixels include main pixels for the first color, main pixels for a second color and the main pixel for a third color, the plurality of pixels include sub-pixels for the first color, sub-pixels for the second color and sub-pixels for the third color, and the first, second and third colors are different from each other (Tanaka, col. 6, lines 34-45; col. 7, lines 36-48; and col. 29, lines 20 – col. 30, line 4.).

Claims 24-25 are method claims corresponding to the apparatus claims 19-21, respectively. Therefore, method claims 24-25 are analyzed and rejected as previously discussed with respect to claims 19-20, respectively.

8. **Claims 18 and 23** are rejected under 35 U.S.C. 103(a) as being unpatentable over Fossum et al. (U.S. Pat. #6,137,100) in view of Murakami (JP Pub. #06-178198) as applied to claims 1 and 9 above, and further in view of Inai et al. (U.S. Pat. #4,437,111).

For **claim 18**, Fossum, as modified by Murakami, discloses the digital camera (Fossum, col. 2, lines 38-59; Murakami, Abstract). However, Fossum, as modified by Murakami, does not

expressly teach wherein the incident light is filtered by an infrared cutting filter so that the filtered incident light includes only visible light.

Also, in a similar field of endeavor, Inai teaches a digital camera (fig. 3) wherein the incident light is filtered by an infrared cutting filter (3) so that the filtered incident light includes only visible light (col. 2, lines 22-34). Also please read col. 1, lines 10-42 and see fig. 1. In light of the teaching of Inai, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify solid-state imaging element of Fossum, as modified by Murakami, with an infrared cutting filter in order to provide an option for producing a monochrome image signal (Inai, col. 1, lines 44-68).

Claim 23 is a method claim corresponding to the apparatus claim 18. Therefore, method claim 23 is analyzed and rejected as previously discussed with respect to claim 18.

9. **Claims 21 and 26** are rejected under 35 U.S.C. 103(a) as being unpatentable over Fossum et al. (U.S. Pat. #6,137,100) in view of Murakami (JP Pub. #06-178198) and Tanaka et al. (U.S. Pat. #6,674,470) as applied to claims 19 and 24 above, and further in view of Inai et al. (U.S. Pat. #4,437,111).

Claims 21 and 26 are claims each corresponding to the apparatus claim 18. Therefore, method claims 21 and 26 are each analyzed, as modified by Yamashita, and rejected as previously discussed with respect to claim 18.

Allowable Subject Matter

10. **Claims 2, 3, 6-8, 10, 11, 14-16** are allowed [as discussed in the previous Office Action (mail date 02/06/2007)].

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carramah J. Quiett whose telephone number is (571) 272-7316. The examiner can normally be reached on 8:00-5:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, NgocYen Vu can be reached on (571) 272-7320. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

CJQ
November 26, 2007

NGOC-YEN VU
SUPERVISORY PATENT EXAMINER